

No : GSLV MkIII - OPLF-CYL/OGIVE-CFRP TOOL-02-2017

Date: 22/11/2017

**Specification / Compliance Format on CFRP Mould with In-Built Heater for Cylinder cum Ogive Panels of OPLF for GSLV MkIII**

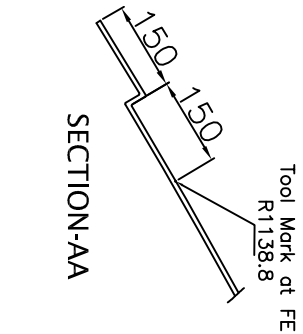
Ref : Drawing for Profile of Boat Tail Mould (CLSD-OPLF-CYL/OGIVE-CFRP TOOL-01)

1. *The Mould is meant for Moulding and Curing of 90 deg. sector CFRP panels which is of Sandwich construction.*
2. *The outer surface of Mould (Moulding side) shall conform to the Profile required as per CLSD-OPLF-CYL/OGIVE-CFRP TOOL-01.*
3. *The moulding surface of the Mould shall be smooth enough to enable stress free extraction of the Cured Panels (Minimum ▼ ▼ finish). Surface shall be resistant to scratch marks and indentation.*
4. *The Mould shall be provided with In-built heater and PLC Control System with Memory to Store the Data and Read the Data using Computer for Curing of Panels.*
5. *The Mould shall be provided with Thermocouple Sensing System and Temperature vs Time Chart Preparation system*
6. *The Mould shall be provided with Emergency Alarm for Temperature Limits.*
7. *The Mould shall withstand Curing temperature of 200 deg. C for minimum 1000 cycles without any change in profile dimensions.*
8. *The Mould shall be designed for pressure application of 6.0 bar over the moulding surface.*
9. *The Mould shall be leak proof with vacuum level of 1.0 bar.*
10. *The Mould shall be provided with provision for handling by Crane and by Fork Lift.*
11. *The Materials used for Mould realization shall be compatible and inert to the general raw materials used for realization of Composite Panels in Aerospace (eg. Carbon / Epoxy adhesive prepreg, Tri-chloro Ethylene cleaning agent, QZ release agent etc.)*
12. *The thickness of the Mould profile and Structural design of Mould shall be carried out by the Party based on the requirements given above.*

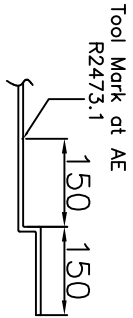
Space for Remarks (if any), Signature &amp; Seal of the Party on Compliance of the above Conditions:

13. *Party should provide three year warranty for vacuum leak, surface finish and PLC control system.*
14. *The brief design and process scheme shall be provided along with Quotation. After placement of Order, the detailed Design Report and Process Document shall be supplied to VSSC for Review. Realization of Mould shall be started only after getting Clearance from VSSC.*
15. *Party shall furnish the details including size, customer name and photographs of similar tools realized by them.*
16. *Party shall have minimum 2 years of experience in realization of CFRP moulds with in-built heaters.*
17. *Party should provide details of raw materials proposed to use (Fiber, resin etc) and their source.*
18. *The Complete detail including Size, configuration of machines, equipments, infrastructure available with the party shall be submitted along with Quotation.*
19. *Party shall give compliance to all the points mentioned in this Annexure-1 (Ref. No. GSLV MkIII-OPLF-CYL/OGIVE-CFRPTOOL-02-2017) by affixing signature and seal on a copy of this Annexure and same to be submitted along with Quotation.*

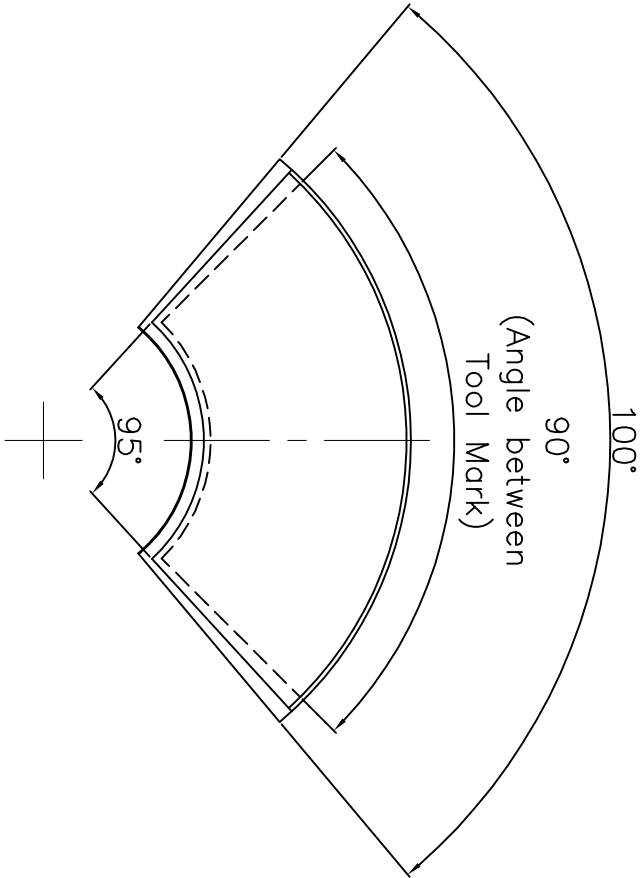
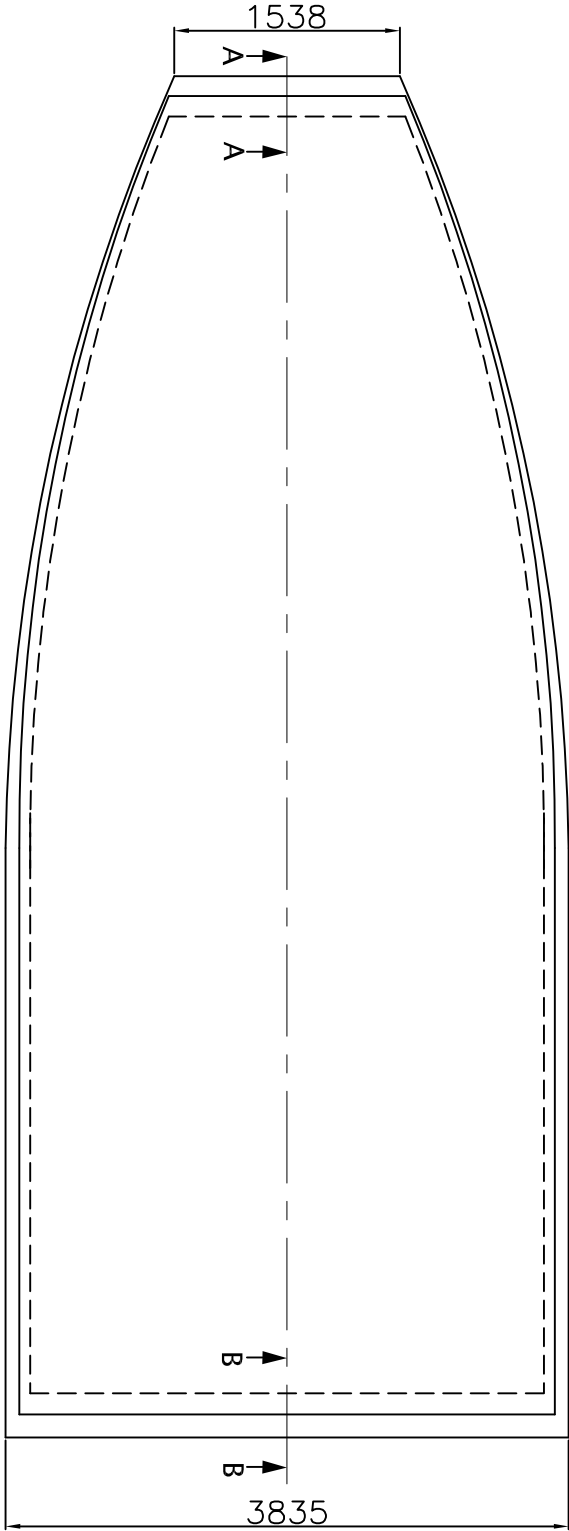
Space for Remarks (if any), Signature & Seal of the Party on Compliance of the above Conditions:



SECTION-AA



SECTION-BB



R1138.8  
(Tool Mark at FE)

R2473.1  
(Tool mark at AE)

DO NOT SCALE THE DRAWING  
ASK IF IN DOUBT  
UNLESS OTHERWISE SHOWN:-  
ALL DIMENSIONS IN MILLIMETERS  
REMOVE SHARP EDGES AND BURRS  
CHAMFER 1mm \* 45°  
MACHINING FINISH IN MICRONS:-  
▽ 8-25    ▽ 1.6-8  
▽▽ 0.025-1.6    ▽▽▽ <0.025

DEVIATION FOR NONTOLERANCED DIMENSIONS (IS: 2102-MEDIUM GRADE)	
DIAMETER & LENGTH UPTO & INCL. 6±0.1	LENGTH IN mm OF SHORTER SIDE OF ANGLE UPTO & INCL.
6 - 30±0.2	1 - 6±1.00°
30 - 120±0.3	6 - 30±0.30°
120 - 315±0.5	30 - 120±0.70°
315 - 1000±0.8	120 - 400±0.10°
1000 - 2000±1.2	
2000 - 4000±2.0	
4000 & ABOVE ±3.0	

REV.NO.	ZONE	DESCRIPTION	SIGN	DATE	ASSEMBLY	DRG
		REVISIONS				

ITEM NO.	DESCRIPTION	MATERIAL	QTY.	WT.	REMARKS
DGN.					
DRN.	INDIAN SPACE RESEARCH ORGANISATION				
CHD.	GOVERNMENT OF INDIA				
CHD.	VIKRAM SARABHAI SPACE CENTRE				
CHD.	TRIVANDRUM				
APPD.	DRG.NO.				
2017	CLSD-OPLF-CYL/OGIVE-CFRP TOOL-01				
SIGN.	SCALE - 1:20				
DATE	SHEET				
	1 OF 1				